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**Le Chatelier’s Principle Worksheet**

1. For the reaction below, predict the equilibrium shift when each of the following changes occurs. This is an endothermic reaction.

**Heat + CH4 (g) + 2H2S(g) ← → CS2(g) + 4H2(g)**

1. Decrease the concentration of dihydrogen sulfide.
2. Increase the pressure on the system.
3. Increase the temperature of the system.
4. Increase the concentration of the carbon disulfide.
5. Decrease the concentration of the methane.

2. What would happen to the position of the equilibrium when the following changes are made to the equilibrium system below?

**2SO3(g) ←→ 2SO2(g) + O2(g)**

1. Sulfur dioxide is added to the system.
2. Sulfur trioxide is removed from the system.
3. Oxygen is added to the system.

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3. What would happen to the position of the equilibrium when the following changes are made to the reaction?

**2HgO(s) ←→ Hg(l) + O2(g)**

1. HgO is added to the system.
2. The pressure on the system increases.

4. When the volume of the following mixture of the gases is increased, what will be the effect on the equilibrium position?

**4HCl(g) + O2(g) ←→ 2H2O(g) +2Cl2(g)**

5. Predict the effect of decreasing the volume of the container.

 a. 2H2O(g) + N2(g) ←→ 2H2(g) + 2NO(g)

 b. SiO2(s) + 4HF(g) ←→ SiF4(g) + 2H2O(g)

 c. CO(g) + H2(g) ←→ H2O(g) + C(s)

6. Predict the effect of decreasing the temperature on the position of the following equilibria.

 a. H2(g) + Cl2(g) ←→ 2HCl(g) + 49.7kJ

 b. 2NH3(g) ←→ N2(g) + 3H2(g) ΔH = 37.2 kJ

 c. CO(g) + H2O(g) ←→ CO2(g) + H2(g) ΔH = -27.6 kJ